

Earth's Deepest Holes.

Artificial Pits Go Down Toward the Center More Than a Mile, But the Natural Chasms in the Ocean Beds Are Five Times That Depth.

Back in the days when people really thought it possible to dig a hole through the earth to China, there used to be much speculation over what would become of a man who happened to fall into the hole; would he stop falling down after awhile and begin to fall up to the other side of the earth, or would gravity keep him oscillating back and forth like a pendulum always coming to rest? Now, however, as we are approaching a condition when a somewhat similar question must be asked, several holes have been dug deep enough into the earth to encounter physical conditions very different from those usually found on the surface.

by the water and its pressure, it yet bears a certain relation to the condition of deep holes in the continents when the general effect on the earth's crust is considered. For when the theory of the earth's internal heat is looked at superficially it would seem that these deep sea pits should be very hot and full of boiling water, since they are nearer to the center of the earth than any other point. But in this matter of temperature there is much to be said concerning the conducting properties of the rock in which the holes are sunk. Also, it must be noted, at what depth below sea level each hole starts.

Utility of Temperatures. As these wells all get hotter and hot-

ter as they are driven deeper and deeper, the outcome suggested is, that as soon as a sufficient depth is reached, natural steam will be encountered, or if the well be dry, water can be pumped in and returned in the form of marketable vapor. There is nothing chimerical in this idea, since many buildings in several parts of the world are heated with naturally warm well water. The hospital at Grenelle and large factories in Wurtemberg are notable examples. Also the geyser shows how heat from the earth's interior can manifest itself forcibly on the surface. Hence temperature measurements are being made in all of the wells as they are drilled. In this country the heat increases on the average about one degree for every sixty feet of depth. It was so in the Pittsburgh well, the temperature of which was measured by Professor William Hallock of Columbia college. This was originally merely an ordinary oil well put down by the Forest Oil company. Several thousand feet had been drilled before the oil sand began to yield sufficient commercial returns, and then they had gone so far and the tube showed such a decided rise in temperature it was decided to dedicate the well to science. So the drilling was continued and Professor Hallock was asked to make a test. Meanwhile as a member of the United States geological survey, he had been conducting some measurements in the well near Wheeling. He was thus able to compare one with the other.

The method of taking the temperature was simple. Self-registering thermometers were placed in iron buckets three feet long and three inches in diameter. A bucket holding thermometers was hung on the end of a steel wire and let down into the hole 200 feet, when another bucket was tied on and the lowering was continued. Measurements were thus made at various depths. It was not until the work was well down in the Pittsburgh well, natural gas was encountered, tapped and used for a time to drive the machinery that worked the drills. In this instance the well furnished power to dig itself out.

Comparative Temperature Obtained. Meantime Professor Hallock sent to Germany for the measurements which were being taken in the Schladabach and the Sprenberg wells under the direction of Mr. E. Dunker of Halle.

Conditions Encountered in Depths. Many of these deep holes have been made the subject of scientific investi-

gations, and as they are widely separated, individual characteristics have been encountered in each. Yet there is a very general co-relation in all which stands as evidence not only of the present internal condition of the earth, but also of its age. These holes show, in fact that the temperature at a mile or so below the surface is at hot as the boiling point of alcohol; at other places men work a mile under the surface in a temperature of 70 degrees Fahrenheit, a heat not greater than that of an average New York June day. When the Savage mine in the Comstock lode was connected at the half mile level with the Gould & Curry mine, the temperature of the connecting gallery ranged from 137 degrees at one end to 145 degrees at the other.

At the bottom of that five-mile pit in the ocean which yawns between the Kermadec and the Friendly islands, the temperature stays always near the freezing point of water. There are many of these deep ocean holes in which the temperature is very low.

And while the lack of heat is induced

known then taken in relation to thickness, it would be possible to determine approximately how long it has been since the exterior of the earth cooled. The deep wells furnish data in this connection also.

Deep In the Land Under Sea.

Among other theories concerning the Calumet rock it is suggested that perhaps the proximity of the waters of Lake Superior has a cooling effect on the copper mines. Low temperatures are characteristic of all the subaqueous deep holes. Beside the chasms in the ocean beds the holes in the land are as pin punctures, for more than half of the whole sea floor lies two miles below the surface of the water. One-eighth of this latter area is pressed below the miles. This eighth itself is seven million square geographical miles in extent and contains areas or rather basins which dip in places to a depth of five miles. These last almost unfathomable holes in the ocean bottom occur only in three places, or at least only three soundings of five miles or more have been made. There may be others, of course, even deeper which have as yet remained undiscovered. The deepest of these holes exist in the South Pacific east of the Kermadec. It is 5,155 fathoms deep or 530 feet more than five geographical miles. The sounding that went to its bottom represents the farthest reach of humankind toward the center of the earth. Yet what came back with the rod was meagre in view of what might have been expected. A little globigerina ooze, a little of that curious red clay which covers nearly half of the sea floor, a few manganese nodules, some minute magnetic spherules of cosmic origin, that was all; and the positive assurance of intense darkness and bitter cold. The ooze was what was left of the remains of the creatures which had pulged through immeasurable distance from "outer dark to inner dark." Volcanic debris, oxides of iron, zeolitic crystals, manganese nodules and remains of whales and sharks are characteristic of these deep holes. One haul of a trawl in the South Pacific brought up from a depth of nearly three miles 1,500 sharks' teeth and fifty fragments of the bones of whales. But beyond these all other objects which might be expected to drop from the surface are wanting. It is not surprising, how-

ever, in view of the terrible pressure of the water at these great depths. Nothing not especially adapted for it could withstand it. It is calculated that at one mile beneath the surface the pressure of the water on all sides of an object is one ton to the square inch. In view of this it was formerly supposed that the pressure at the bottom of the ocean would be great enough to turn the bottom to stone. But the dredge shows this to be untrue.

Habitants of Extreme Depths.

The fish that live in these deep holes are soft and gelatinous, the only condition in fact which would save them from the effects of the pressure. The water permeates their soft structure and counteracts its own pressure. As suggested above, it is very cold in the deep holes. Professor Agassiz mentions how cold the ooze from the bottom feels—how cold mud nearly froze his hands stiff under the boiling sun. It gave him an idea for cheap refrigeration and he lowered a bottle of wine nearly two and a half miles under the water for the purpose of freezing it.

It came up cold enough to be sure, but full of muddy salt water which had forced its way through the cork.

Forty-three areas have been found on the sea bottom lying deeper than four miles. Eight of these are deeper than four miles. These are: Nares Deep in the North Atlantic; Ross Deep in the Antarctic; Weber Deep in the Pacific near the Hawaiian Islands; Sapan Deep in the North Pacific; and Aldrich and Richards Deeps in the South Pacific. Three of these deeps contain five mile holes. They are Aldrich, Tuscarora, and Weber deeps. But the Aldrich deep hole is the deepest, as was stated above. Yet, deep as it is, in spite of the fact that Mount Everest, the highest mountain in the world, if dropped into the hole would sink out of sight in the ocean, that little pinnacle called Sunday Island standing squarely in this five-mile hole is able to rear its head 2,000 feet above the surface of the sea. Incidentally this conveys a vivid idea of the contrast, nature is able to make in the matter of high hills and deep holes.

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SCHOOL FOR TRUANTS.

Chicago Delinquents Will Have to Go There and Stay.

Chicago is at last to have a Parental school. School teachers will no longer be annoyed by the machinations of transient pupils. Habitual "hookies" and proclivities will be met with a corresponding and effective remedy.

These would-be deserters of the public schools will be properly taken care of by the enactment of a law recently passed by the legislature providing for the establishment of a Parental school in Chicago. The school will be established in Chicago within the next three months. The Parental school is what its name indicates, namely, a school where the parent is to be placed of school deserted will there and both a home and school. Children who persist in truancy will be brought before the committee of compulsory education, each case examined, and the inference made as to the cause of the truancy. The officers of the school will have the cooperation of the parents in the work.

In the development of the institution has awaited the investigation and report of Superintendent Thomas H. Macdonald. The report has now been completed and was adopted by the board of education at their meeting, and it is expected the work will now go rapidly forward.

The school building will be a handsome brick building on a forty-acre tract of land. By March 1 it is expected to have the school in full running order. The institution will be a model of the school system of Chicago. It is planned to make it the finest example of parental schools in the country.

ent Thomas H. Macdonald and Robert M. Smith, supervisor of manual training, are charged with the duty of carrying out the plan of the school. The school will be a model of the school system of Chicago. It is planned to make it the finest example of parental schools in the country.

Union Gas company, the Harlem River and Portchester railroad, the Leather Manufacturers' National bank, the Mutual Life Insurance company, the Cleveland & Columbus railroad, First Municipal Bond Insurance company, the International Banking & Trust company, and the Kern Indescent Gas Light company.

John D. Rockefeller's investments in these corporations will bring his total income this year up to at least \$60,000, and perhaps to \$75,000. Based upon \$60,000, his daily income for every one of the 365 days in the year is \$164.38, one-fourth of which would be deemed an independent fortune by the average family.

Balm. (Exchange.)

Mrs. Smith—Mrs. Brown has had such an experience. Arrested for shoplifting. All a mistake of course.

Mr. Jones—I suppose she must have been very much annoyed.

Mrs. Smith—Not at all. The papers all said she was "of prepossessing appearance."

The Rural Humorist. (Harper's Bazar.)

"Your Aunt Almira, the beam at less than a hundred pounds, don't she?"

"Yes, it is."

Honest Farmer Stockpole blatted joyously in appreciation of the only joke he had perpetrated since the previous autumn.

See Mehesy the Furrier for furs. Knutsford.

\$9.50 White Blankets, on sale at \$6.65 a pair. F. AUERBACH & BRO.

A Bread That Has a Reputation is ROYAL BREAD.

HOTEL KNUTSFORD. G. S. HOLMES, PROPRIETOR.

New and elegant in all its appointments. 250 rooms, single and en suite; 75 rooms with bath.

E. S. YOUNG, Cashier. L. S. HILL, President. MOSES THATCHER, Vice President.

U. S. DEPOSITORY, DESERT NATIONAL BANK, SALT LAKE CITY, UTAH.

CAPITAL, \$500,000. SURPLUS, \$250,000.

Safety Deposit Boxes for Rent. NATIONAL BANK OF THE REPUBLIC, U. S. DEPOSITORY.

Frank Knox, President. George A. Lowe, Vice President. Ed. W. Duncan, Cashier.

CAPITAL PAID IN, \$300,000.

Banking in all its branches transacted. Branches in all the principal cities of Europe. Interest paid on time deposits.

WALKER BROTHERS, BANKERS, SALT LAKE CITY, (Established 1853.)

A General Banking Business Transacted. Safety Deposit Boxes for Rent.

WELLS, FARGO & CO'S BANK, SALT LAKE CITY, UTAH.

(ESTABLISHED 1852.)

Transact a General Banking Business.

J. E. DOOLY, Cashier.

T. R. JONES & CO, BANKERS, SALT LAKE CITY, UTAH.

(ESTABLISHED 1852.)

Transact a General Banking Business.

COMMERCIAL NATIONAL BANK, Capital Paid in, \$200,000.

General Banking in All its Branches. Directors—Dr. Theodore Meyer, John J. Daly, O. J. Salisbury, Maylan C. Fox, Thos. E. Noble, George M. Downey, John Donnellan, A. F. Holden.

THE DESERT SAVINGS BANK, DIRECTORS:

W. W. Ritter, President. Moses Thatcher, Vice President. James Sharp, John R. Barnes, John C. Cutler, David Eccles, A. W. Carlson, George R. Hume, John H. Winder, R. H. Perry, E. R. Eldridge, W. F. James.

Four per cent interest paid on savings deposits.

MCCORMICK & CO., BANKERS, SALT LAKE CITY.

(Established 1873.)

Transact a General Banking Business. Established 1841. 150 Offices. The Oldest and Largest.

R. G. DUN & CO., The Mercantile Agency.

GEORGE OSMOND, General Manager, Utah and Idaho. Offices in Progress building, Salt Lake City.

WHEN IN DOUBT, TRY STRONG AGAIN! Sexine Oil.

Manhood Restored "CUPIDINE"

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Since the Coming of the Pioneers

there has never been such a crowd and "push" as we have had for two days past at our opening. It was, in fact, a "crushing" success. We provided for TWO THOUSAND visitors, but the crowd kept on coming till over SEVEN THOUSAND SOUVENIRS were given away, after the babies were gone. We regret that some visitors were disappointed. We could not even ask if you wanted to buy, and on account of the forced inattention we were forced to give, we have decided to extend our offer of a discount of 35 PER CENT ON HAVILAND CHINA and 20 PER CENT ON ALL CUT GLASS, LAMPS, POTTERY, VASES, JARDINIERS, Etc., ALL NEXT WEEK.

Don't forget we are selling the ROUND OAK and USLAC FURNACES, which will heat your house to 70 degrees in the COLDEST WINTER WEATHER.

Have you seen our Aluminum or Japan Finish STEEL RANGE at \$25.00? It is warranted.

Georgz M. Scott-Strevell Hardware Co.

The call of the Guinea Fowl Resounds thro' the land—Buckwheat! Buckwheat! Buckwheat!

What breakfast more appetizing more satisfying in cool, crisp, bracing weather than buckwheat cakes and sausages! We attend to the buckwheat end of it, in that we sell the Best Buckwheat Flour you can buy anywhere in this broad land of ours. Buckwheat flour in sacks delivered at your home.

HENDERSON'S CASH GROCERY, 267-271 Main Street.

THE LATEST STYLES

Men's Hats. Boys' Hats.

Are always to be found here, and at any price you may wish to pay. Fedoras and Stiff Hats in every up-to-date shape and quality, in all the staple and fancy colors, are to be found here in endless profusion.

A Silk Hat

with that dress suit is always the proper thing. We are showing the swellest line of the very latest styles ever displayed in any store.

THE SIEGEL CLOTHING CO., 61, 63, 65 Main St.

VIBURNO=LAX

MAKES HEALTHY, HAPPY HOMES.

No home can be happy where the mother is sad and unhealthy. If you would make your home happy you must get rid of all these little ailments; they're all caused by some female trouble—get rid of the cause and you remove the effect. Viburno-Lax is the one sure remedy for this. It will make you well. It will make your home happy.

Cured of Painful Menstruation by Viburno-Lax.

A Sufferer From Female Weakness Cured by Viburno-Lax.

One woman writes: I was so miserable during the menstrual period that life was a burden to me. I was dizzy, nervous, and had such pains in my back. I tried all kinds of applications and remedies, but got no relief. After taking two boxes of Viburno-Lax I began to improve; my nervousness left me. After I had taken four boxes I did not have any more troubles at all. I can assure you that I am a very happy woman now.

Viburno-Lax comes in tablet form, at all druggists, 50c and \$1.00 per box.

THE STATE BANK OF UTAH

CORNER MAIN AND SOUTH TEMPLE STREETS, SALT LAKE CITY.

HEBER J. GRANT, President. WILLIAM B. PRESTON, Vice President. HEBER M. WELLS, Cashier. CHARLES S. BURTON, Asst. Cashier.

DIRECTORS: Isaac Barton, Charles S. Burton, F. J. Farnsworth, Byron Groo.

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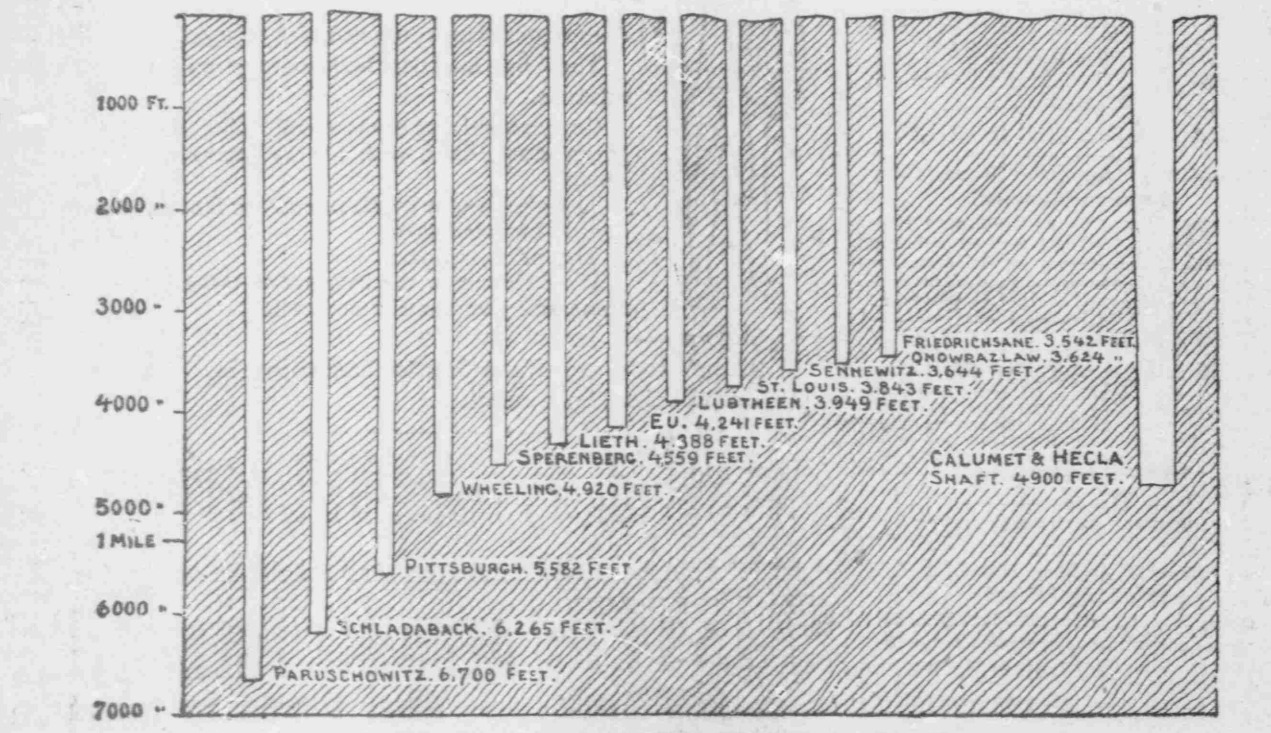


DIAGRAM SHOWING RELATIVE DEPTHS OF SHAFTS.

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